

### **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims**

1. (currently amended) A nanocomposite optical plastic article, comprising:  
a plastic host material having a refractive index  $n_{\text{plastic host}}$  and a temperature sensitive optical vector  $x = dn_{\text{plastic host}}/dT$ ;  
a core shell nano-sized particulate material having a refractive index  $n_{\text{particulate}}$  and having a temperature sensitive optical vector  $x_p = dn_{\text{particulate}}/dT$  wherein the temperature sensitive optical vector  $x_p$  of the core-shell nano-sized composite particulate is directionally opposed to temperature sensitive optical vector  $x$  of the plastic host material is dispersed into said plastic host material, said core-shell nano-sized particulate material having a core material with a refractive index  $n_{\text{core}}$  and a shell material having a refractive index  $n_{\text{shell}}$ , wherein the refractive index  $n_{\text{shell}}$  is lower than the refractive indices of both the host material,  $n_{\text{plastic host}}$ , and the core material,  $n_{\text{core}}$  and wherein the optical vector of said plastic host material  $x$  and the optical vector of said core-shell nano-sized composite particulate  $x_p$  are opposite in sign and additionally the refractive index of said shell material  $n_{\text{shell}}$  is less than the refractive indices of both said core material  $n_{\text{core}}$  and said plastic host material  $n_{\text{plastic host}}$  material so that  $n_{\text{shell}} < n_{\text{plastic host}} < n_{\text{core}}$ .
2. (canceled).
3. (previously presented) A nanocomposite optical plastic article as recited in claim 1 wherein said plastic host material is polymethylmethacrylate.
4. (previously presented) A nanocomposite optical plastic article as recited in claim 1 wherein said temperature sensitive optical vector of said shell material  $x_{\text{shell}} = dn_{\text{shell}}/dT$  is directionally opposed to said temperature sensitive

optical vector  $x$  of said host material wherein said host material is a polymethylmethacrylate host material.

5. (previously presented) A nanocomposite optical plastic article as recited in claim 1 wherein said core material of said core-shell nano-sized composite particulate material is selected from the group consisting of: silica nanoparticles, magnesium oxide nanoparticles, zinc sulfide nanoparticles, zinc selenide, and cadmium sulfide.

6. (previously presented) A nanocomposite optical plastic article as recited in claim 5 wherein said core material of said core-shell nano-sized composite particulate material has a particle size of about 15nm.

7. (previously presented) A nanocomposite optical plastic article as recited in claim 5 wherein said core material of said core-shell nano-sized composite particulate material has a particle size less than about 50nm.

8. (previously presented) A nanocomposite optical plastic article as recited in claim 5 wherein core material of said core-shell nano-sized composite particulate material has a particle size less than about 20 nm.

9. (canceled).

10. (currently amended) A nanocomposite optical plastic article as recited in claim 9 wherein said ~~coated~~ coating layer is selected from the group consisting of: amorphous silica, fluoropolymer, magnesium fluoride, and silsequinoxane materials.

11. (currently amended) A nanocomposite optical plastic article as recited in claim 1 wherein said shell material further comprises a ~~coated~~ coating layer of silica.

12. (currently amended) A nanocomposite optical plastic article as recited in claim 11 wherein said core material of said core-shell nano-sized

composite particulate material further comprises a core material with a ~~coated~~ shell having a thickness in the range of about 5nm to about 17nm.

13. (currently amended) A nanocomposite optical plastic article as recited in claim 1 ~~wherein said core material of said core-shell nano-sized composite particulate material~~ wherein said shell further comprises a magnesium fluoride coating layer.

14. (previously presented) A nanocomposite optical plastic article as recited in claim 1 wherein said core material of core material of said core-shell nano-sized composite particulate material further comprises a material selected from the group consisting of: potassium titano phosphate, aluminum oxide, magnesium aluminate, yttrium oxide, and calcium carbonate.

15. (canceled).

16. (canceled).

17. (canceled).

18. (canceled).

19. (canceled).